



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE AUDIT AGENCY
NORTON AIR FORCE BASE, CA 92409

6 October 1986

REPLY TO
ATTN OF

AFAA Area Audit Office
Vandenberg AFB CA 93437-5000

SUBJECT

Report of Audit 472-7-1, Review of the Reliability and
Quality Assurance Program for the Shuttle Processing Contract,
Western Space and Missile Center, Vandenberg AFB CA 93437-6002

TO

WSMC/CC AFSC/CC

1. Introduction.

a. The National Aeronautics and Space Administration (NASA), Kennedy Space Center (KSC) FL contracted with Lockheed Space Operations Company to provide Shuttle processing support at KSC and Vandenberg AFB. For the Vandenberg AFB portion of the contract, NASA KSC delegated to the Western Space and Missile Center (WSMC) the government's reliability and quality assurance function. This delegation authority was provided under the Federal Acquisition Regulation (FAR), Part 42 and Subpart 42.1, Interagency Contract Administration and Audit Services. By Letter of Delegation, dated 29 September 1983, NASA KSC established a formal cross-servicing agreement in accordance with the FAR. Further, the Letter of Delegation, Revision A, dated 4 November 1983, specifically required WSMC to implement a government Reliability and Quality Assurance (R&QA) program in accordance with NASA KSC requirements.

b. The criteria used by audit included the FAR, NASA KSC Letters of Delegation previously mentioned, and the following:

(1) Space and Missile Test Organization (SAMTO),
Memorandum of Understanding (MOU), 22 August 1983.

(2) NASA Handbook (NHB) 5300.4 (2B-1), Quality
Assurance Provisions for Delegated Government Agencies,
June 1985.

(3) Kennedy Management Instruction (KMI) 1710.1D,
Safety, and Reliability and Quality Assurance Programs,
August 1982.

FREEDOM OF INFORMATION ACT

The disclosure/denial authority prescribed in AFR 175-4
will make all decisions relative to the release of this
report to the public.

(4) Kennedy Handbook (KHB) 5310.1B, Reliability and Quality Assurance Handbook, April 1982.

2. Scope.

a. The overall objective of this audit was to determine whether the Western Space and Missile Center (WSMC), Reliability and Quality Assurance (R&QA) program met established criteria. Accordingly, we reviewed and evaluated:

-- the overall Air Force and NASA management policies which generally directed the development of the WSMC R&QA program, and

-- the WSMC management decisions and actions taken as a result of the overall policy direction provided.

b. The Air Force/NASA policies, and supporting documentation evaluated covered the period August 1983 through June 1986. This audit was accomplished in accordance with generally accepted government auditing standards and, accordingly, included such tests of internal controls as considered necessary under the circumstances. This audit was accomplished from April through July 1986.

3. Overall Evaluation. The Western Space and Missile Center (WSMC), Reliability and Quality Assurance (R&QA) program was not developed and implemented in accordance with established criteria. Specifically, the WSMC Directorate of Product Assurance, Space Shuttle Division (WSMC/QAG) did not comply with NASA KSC Letter of Delegation requirements:

a. Air Force and NASA overall policy directions varied in respect to how the WSMC/QAG R&QA program was to be implemented, and

b. WSMC/QAG management decisions and actions taken as a result of the policy direction did not meet all of the NASA KSC Letter of Delegation requirements in the development of working level direction.

4. R&QA Operating Plan and Instructions.

a. Finding. The WSMC/QAG R&QA Operating Plan and Instructions did not provide adequate working level direction to Air Force personnel performing government surveillance over contract operations as required by the NASA KSC Letter of Delegation. On three separate occasions during the period July 1985 through June 1986, formal NASA KSC studies were conducted which identified deficiencies requiring WSMC/QAG corrective action to the R&QA Operating Plan and Instructions, i.e., that procedures or checklists be developed. In the latest study, 24 June 1986, the NASA KSC representative stated, "OI's (operating instructions) are not acceptable as approximately 75% to 80% of

the OI's must be totally rewritten to provide instruction to the Quality personnel rather than policy restatement."

b. Two prominent reasons existed for why the NASA KSC Letter of Delegation was not effectively implemented. Each reason covered separate periods of time:

(1) 14 May 1984 through 15 July 1985. The Commander, Space and Missile Test Organization (SAMTO), Vandenberg AFB and the Program Director, National Space Transportation System, Johnson Space Center TX established a memorandum of understanding (MOU), dated 22 August 1983, which permitted the Air Force to use Air Force requirements in developing its R&QA Program. Then on 14 May 1984, the Chief, WSMC/QAG accepted the terms of the NASA KSC Letter of Delegation, Revision A, 4 November 1983, which directed that NASA KSC requirements be used. Regardless, the MOU was enforced through 15 July 1985, not the NASA KSC Letter of Delegation.

(2) 16 July 1985 through 30 June 1986. On 16 July 1985, the Chief, WSMC/QAG took action to enforce the NASA KSC Letter of Delegation. However, no action was taken to rescind the MOU at that point, and the WSMC/QAG action to enforce the NASA KSC Letter of Delegation did not include all requirements; specifically, Kennedy Handbook (KHB) 5310.1B, Reliability and Quality Assurance Handbook. NASA KSC personnel indicated that KHB 5310.1B was essential for developing an acceptable R&QA program, particularly in establishing working level direction. However, during this review, audit and management identified that a misinterpretation existed between NASA KSC and WSMC/QAG personnel. According to the Chief, WSMC/QAG, the NASA KSC Letter of Delegation reference to KHB 5310.1B was not interpreted as a requirement. Rather, KHB 5310.1B was considered optional. However, we noted that prior NASA KSC correspondence specifically referenced KHB 5310.1B as a requirement. For example, in a NASA KSC Resident Office study, (report dated 16 July 1985), specific findings addressed WSMC/QAG noncompliance with KHB 5310.1B. The Chief, WSMC/QAG, concurred with the NASA KSC Resident Office findings, and responded to one finding by stating, "WSMC/QA Shuttle Division is no longer attempting to operate by both NASA and Air Force direction. OI's (operating instructions) are being prepared which reflect KSC methodology and comply with both NHB 5300.4 (2B-1) and KHB 5310.1." Consequently, NASA KSC personnel did expect KHB 5310.1B to be implemented. Yet on 5 June 1986, WSMC/QAG formally took exception to KHB 5310.1B as a requirement and recommended a working group be established between NASA KSC and Air Force personnel to resolve the problems WSMC/QAG had in implementing KHB 5310.1B.

c. Although Air Force and NASA KSC quality assurance personnel are working to revise the R&QA Operating Plan and Instructions in accordance with the NASA KSC Letter of Delegation, including KHB 5310.1B, actions currently taken and in the future must continue to ensure that working level direction is

kept timely and in compliance with NASA KSC requirements. Without such working level direction, the quality of government surveillance actions is impaired and reduces the ability to document objective and verifiable observations over contract operations.

5. Recommendations. The Chief, WSMC Directorate of Product Assurance should require that:

a. Recommendation 1. The current R&QA Operating Plan and Instructions are modified and approved in accordance with the NASA KSC Letter of Delegation, Revision A, 4 November 1983.

b. Management Comments. The Commander, Western Space and Missile Center concurred with the finding and Recommendation 1 and stated, "The Reliability and Quality Assurance (R&QA) Operating Plan and Instructions were modified in accordance with the NASA, Kennedy Space Center (KSC) Letter of Delegation, Revision A, 4 November 1983, and presented to NASA for review and approval on 22 July 1986. The plan was approved by NASA KSC on 14 August 1986. NASA review of the R&QA Operating Instructions is continuing and NASA comments are being incorporated as received. WSMC/QA anticipates NASA KSC approval of all operating instructions by 15 October 1986. OPEN."

c. Recommendation 2. Once a NASA KSC approved R&QA Operating Plan and Instructions is received that no changes or modifications are made without NASA KSC coordination and approval.

d. Management Comments. The Commander, Western Space and Missile Center concurred with Recommendation 2 and stated, "No changes will be made to the NASA approved documents without NASA coordination and approval. CLOSED."

6. Recommendation 3. The Commander, Western Space and Missile Center should take action to coordinate and modify the Memorandum of Understanding, 22 August 1983, to reflect NASA KSC Letter of Delegation requirements. Coordination and approval would require the SAMTO/CC and the Space Transportation System Program Director, Johnson Space Center TX concurrence.

7. Management Comments. The Commander, Western Space and Missile Center concurred with Recommendation 3 and stated, "NASA, Johnson Space Center initiated action in June 1986 to revise the Memorandum of Understanding (MOU), dated 22 August 1983, to reflect NASA KSC Letter of Delegation requirements. A draft was circulated to all affected activities in July 1986 for comment. A final draft was prepared and circulated in late August 1986. WSMC/QA anticipates final signature by SAMTO/CC and the STS Program Manager, Johnson Space Center, Texas by 15 October 1986. OPEN."

8. Evaluation of Management Comments. Management comments and actions planned (paragraphs 5.b. and 7) or taken (paragraph 5.d.)

are responsive to the finding and recommendations in this report.

9. Discussion with Responsible Officials. A draft of this report was provided to the Commander, Western Space and Missile Center on 13 August 1986. The report was discussed with the Vice Commander, Western Space and Missile Center; the WSMC Director of Quality Assurance; and the Commander, 6595 Shuttle Test Group. Management's formal comments were received on 15 September 1986.

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